

THE SINCLAIR/TIMEX USERS MAGAZINE

Volume III

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Number 9

Photo: Inside the Spectrum Plus

The interior of your ZX Spectrum +
In this view of the Spectrum's circuit board, the two ribbon connectors to the keyboard have been removed.

When the Spectrum is in use, pressing a key brings a pair of wires under the keyboard into contact. This sends a code signal to the CPU.

Cassette sockets
These are used to send information and programs from the memory to a tape and to feed them back into the memory from the tape.

Central Processing Unit (CPU)
The 'brains' of the computer. The CPU is a Z80 microprocessor. It carries out all the computing calculations and controls the overall operation of the Spectrum.

Uncommitted Logic Array (ULA)
This chip generates the display from information held in RAM and also acts as a systems controller.

TV output
This produces the signal that goes to the television set.

Logic chips
These chips act as an interface in the exchange of information between the CPU and the RAM.

9 VDC socket
This connects to the power supply.

Keyboard connector point
One of the ribbon connectors to the keyboard is attached here.

Edge connector
This connects the Spectrum to external devices such as a printer.

TV encoder
This changes signals produced by the computer's circuits into colour television signals.

Random Access Memory (RAM)
These chips contain the program that is fed into the computer and any particular information needed by the program, such as values held by variables. The contents of the 48K of RAM can be changed from the keyboard, and can be erased altogether by resetting or turning off the computer.

Read Only Memory (ROM)
The 16K section of the memory holding the permanent operating instructions needed by the CPU. Among other things, these instructions convert BASIC programs into a form that the CPU can understand. The contents of these memory chips cannot be altered from the keyboard.

Keyboard connector point
One of the ribbon connectors to the keyboard is attached here.

Loudspeaker
This produces sound when required.

Voltage regulator
This component prevents any changes in voltage from affecting the computer.

Special Feature: Adding a Keyboard to Your 2068

How (Not) to Sell a Computer!

WORM — A Simple Arcade Game Listing

"MemoNotes" Debuts

The SYNCWARE GROUP is pleased to announce the publication of "MemoNotes", the Newsletter for Memotext and Memocalc users. This Publication will appear four times a year, starting with the summer, 1985 issue. It contains information for efficient use of these programs, as well as technically oriented articles for their improvement and adaptation.

Subscription price is US\$ 13.95. "MemoNotes" subscription orders may be sent to MemoNotes, c/o Thomas B. Woods, PO BOX 64, Jefferson, NH 03583 USA.

Tape versions of the Memotext word-processor program (for TS 1000/1500), with several significant improvements, and suitable for virtually any hardware configuration, are also available. Cost of the tape versions is US\$ 29.95. An EPROM version for the Oliger video upgrade board is available for US\$ 34.95. Inquiries, discount information for present Memotext owners, and orders should be addressed to: Fred Nachbaur, Compartment 12, Mountain Station Group Box, Nelson, BC Canada V1L 5P1.

Zebra Graphics Tablet Addendum

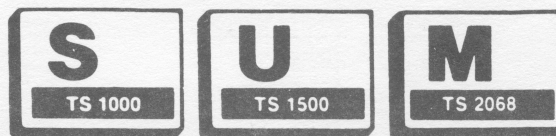
Last month we inadvertently left out the "digitized" cat I tried drawing--so here it is this month to remind you of how powerful the graphics tablet can be. If anyone out there has their own creation using the Zebra Graphics Tablet they would like to show off, send it in and we'll consider printing it!



Gainesville TUG Meetings

The Gainesville Timex Users Group has changed its meeting time and place. Meetings are now the third **Tuesday** of each month in the northeast classroom area of the **Crossroads Church** building located at 2720 SW Second Avenue in Gainesville. Meeting time is still 7:00 p.m. These facilities are somewhat larger than what we have used in the past and can accommodate a number of computer set-ups.

Anyone needing more information about the next meeting can call Joe Williamson at 904/462-1086 or Richard Cravy at 904/378-9000.



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WORM — A Type-it-yourself Game

Have you been looking for a game for the 2068 that doesn't require lightning fast reflexes and nerves of steel? Well, Worm will give you a chance to play a game without dodging/blastng ten zillion human eating, earth destroying thingamagigs.

As you type in the following program, there are a couple of lines that you should pay special attention to.

In line 20, notice the INPUT "" and the PRINT #1; statements. The INPUT"" will clear the bottom two lines only! The PRINT #1; then allows printing on the bottom line! A PRINT #0; will allow printing on the next to the bottom line.

Line 195 has POKE 23568,8 which puts the computer into CAPS LOCK mode to accept your initials as capitals. POKE 23568,0 returns you back to lower case mode. Also included in the program is a routine for checking high score and allowing input of initials before the scoreboard is printed.

-- G A Smith/Austell, GA

```

5  RANDOMIZE : DIM a(11): DIM
p$(11,3): GO TO 220
10 CLS
20 INK 5: FOR i=k TO k+long: P
RINT AT CODE a$(1,i),CODE a$(2,
i);"O": GO SUB 40: GO SUB 120:
NEXT i: INPUT "": PRINT #1; INK
5;"Lives=";liv;TAB 13;"Score="
;sc;" "
25 GO SUB 35: GO SUB 120: LET
cnt=cnt+1: IF cnt=13 THEN LET
g=g+RND: GO SUB 170: LET cnt=0
30 GO SUB 35: LET g=g+RND: GO
TO 20
35 FOR q=1 TO 2: PRINT AT CODE
a$(1,1),CODE a$(2,1);" ": LET
a$(1,1 TO 629)=a$(1,2 TO 630):
LET a$(2,1 TO )=a$(2,2 TO ): LE
T k=k-1: NEXT q: RETURN
40 LET a= STICK (1,1): IF j=0
AND (a=5 OR a=6 OR a=9 OR a=10)
THEN GO TO 70
45 IF j=0 AND STICK (1,1)<>0
THEN LET dir= STICK (1,1): GO
TO 70
50 IF INKEY$="5" THEN LET dir
=4
55 IF INKEY$="6" THEN LET dir
=2

```

```

60 IF INKEY$="7" THEN LET dir
=1
65 IF INKEY$="8" THEN LET dir
=8
70 IF dir=1 THEN LET L=L-(1 A
ND L>1): GO TO 90
75 IF dir=8 THEN LET c=c+(1 A
ND c<32): GO TO 90
80 IF dir=2 THEN LET L=L+(1 A
ND L<22): GO TO 90
85 IF dir=4 THEN LET c=c-(1 A
ND c>-1)
90 IF odir<>dir THEN BEEP .07
,5: LET odir=dir
95 LET z$=SCREEN$ (L,c): IF z$
="#" OR z$="O" THEN BEEP .5,33
: FOR q=1 TO 5: BEEP .1,-44: NE
XT q: GO TO 170
100 IF z$="^" THEN LET sc=sc+1
*(1+liv): BEEP .03,5: BEEP .03,
9
105 IF z$="@" THEN LET sc=sc+1
*(1+liv): BEEP .03,0: BEEP .03,
3: BEEP .03,5: BEEP .03,7: BEEP
.03,9
110 IF z$="*" THEN LET sc=sc+3
*(1+liv): BEEP .03,0: BEEP .03,
5: BEEP .03,9
115 LET k=k+1: LET a$(1,k)=CHR$
L:LET a$(2,k)=CHR$ c:RETURN
120 IF RND<.7 THEN RETURN
125 LET n=INT (19*RND)+1: LET m
=INT (RND*29)+1: LET z$=SCREEN$
(n,m): IF z$<>" " THEN GO TO
145
130 IF RND>.3 THEN PRINT INK
4;AT n,m;"^": RETURN
135 IF RND>.1 THEN PRINT INK
6;AT n,m;"*": RETURN
140 PRINT INK 3;AT n,m;"@": BE
EP .01,13: RETURN
145 IF z$="O" OR z$="#" THEN R
ETURN
150 PRINT AT n,m;" ": RETURN
155 LET long=long+RND: FOR q=1
TO INT (g)
160 LET n=INT (18*RND)+2: LET m
=INT (29*RND)+1: IF SCREEN$ (n,
m)="#" OR SCREEN$ (n,m)="O" THE
N GO TO 160
165 BEEP .1,7: BEEP .1,9: PRINT
BRIGHT 1; INK 2;AT n,m;"#": N
EXT q: BRIGHT 0: RETURN

```

```

170 LET zz=zz+1: LET liv=liv-1:
IF liv>0 THEN GO TO 265
175 CLS : RESTORE 9999: PRINT
INK 4;"You are dead! Your score
=";sc: FOR i=1 TO 11: READ a,b
: BEEP a,b: NEXT i
180 FOR i=1 TO 10: IF sc>a(i) T
HEN GO TO 190
185 NEXT i: GO TO 200
190 FOR k=10 TO i STEP -1: LET
a(k+1)=a(k): LET p$(k+1, TO )=p
$(k, TO ): NEXT k
195 PRINT INK 4;"Your sore=";
sc;" & is # ";i;"!": PRINT "Key
in your 3 initials & press ENT
ER.": POKE 23658,8: INPUT LINE
p$(i): LET a(i)=sc: POKE 23658
,0
200 PRINT INK 6;TAB 9;"TOP 10"
: FOR i=1 TO 10: LET z$=STR$ i:
PRINT INK 6;TAB (10-LEN z$);i
;".":p$(i);".....";a(i): NEXT i
: PRINT INK 5;"Press("; FLAS
H 1;"P"; FLASH 0;")lay OR ("; F
LASH 1;"Q"; FLASH 0;")uit."
205 LET Z$=INKEY$: IF Z$="P" OR
Z$="p" THEN GO TO 220
210 IF
Z$="Q" OR Z$="q" THEN STOP
215 GO TO 205
220 PAPER 0: LET liv=5: LET sc=
0: INK 5: BORDER 0: CLS : PRINT
TAB 12; FLASH 1;"WORM"; FLASH
0: PRINT 'TAB 3;"Everybody lov
es to play WORM!"
225 PRINT '"In WORM, you are an
ever growing& always hungry ce
ntpede.'"You move around the a
rea trying not to touch the red
areas or yourself!"
230 PRINT "To touch a red area
or yourself is certain death &
causes you to lose one of your
lives.'"You score 1 point by
landing on the "; INK 4;"^"; IN
K 5;" (leaf) or 3 points for th
e "; INK 6;"*"; INK 5;" (lemon)
."
235 PRINT "The "; INK 3;"@"; I
NK 5;" (flowers) are 5 points!"

240 PRINT "You score bonus poin
ts accordingto the life level y
ou are on.'"Press any key.": P
AUSE 0: CLS
245 PRINT '"You may use the a
rrow keys or a joystick. A BEEP
will sound to '"let you know

```

your move has been registered."

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250 PRINT '"If you do not turn,
you continuein the direction y
ou were going.'"Good Luck! &
Happy eating!'"Press 1 for ke
yboard.'"Press 0 for joystick.
"

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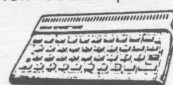
255 LET j=CODE INKEY$-48: IF j<
0 OR j>1 THEN GO TO 255
260 CLS : LET zz=0: LET long=3:
LET k=1: LET L=k: LET c=k: LET
cnt=zz: LET dir=long-k: LET g=
-13: DIM a$(2,630): LET odir=di
r: FOR i=L TO dir: LET a$(1,i)=
CHR$ i: LET a$(2,i)=CHR$ i: NEX
T i: GO TO 10
265 CLS : PRINT INK 5;"'"You
got killed!'"Your score=";sc
'"Only ";liv;" live(s) left!'"
'"Press a key or fire button."
270 IF STICK (2,1)=1 OR INKEY$
<>" THEN GO TO 260
275 GO TO 270
9999 DATA .75,4,.75,4,.2,4,.75,4
,.3,6,.75,6,.2,4,.6,4,.3,3,.7,4
,.74,4

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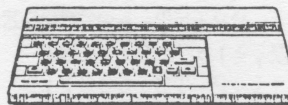
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How (Not) to Sell Computers

An Editorial

Hard times have fallen upon many in the computer industry. As a result, companies are having to be a lot more aggressive and informed in selling their product. . .or are they?

I'm afraid that my experience has been less than impressive in trying to deal with many computer hardware and software companies. If it wasn't for the fact that I normally have no trouble being understood or otherwise interfacing with the rest of the world, I would think that I had a problem. Let me give some examples of recent episodes.

I am helping a friend put together a computer system which is to include a dot matrix printer with "near letter quality" output for casual word processing uses. I visited the leading computer dealer in town and asked about the new Epson FX 85. First, the salesman told me that model was no longer being made (it was introduced in July!). After correcting him, he then went to ask the sales manager if one was available in stock or on display. No one knew! A search was made of the stock room to no avail. They had no literature available either, so the salesman actually had to call Epson to confirm the machine's existence and features. I finally left the store as the salesman had abandoned me to help another salesman again search their stockroom for Macintosh diskettes (they were out of them also!) He never asked if I wanted one, could I come back, what my name was, or anything. Would you buy a printer from this man? With but one exception, this has been my uniform experience with this particular company.

A few months ago I entered the local Computerland to ask about a very popular word processor program which they stocked. No one knew how to use it, could not find their "demo" disk, and could not even get past the opening screen of the main program. However, they could not understand why I was not falling all over myself trying to give them \$150 for the program!

I have a rather popular brand of dot matrix printer which offers an 8K print buffer as an option and the ability to define and print out your own character sets --if you can figure out the manual trans-

lated straight from the Japanese language. Several calls to the customer service and technical service numbers yielded these results: "Do it like on Epson." "Move the little switches on the back, but I don't know what the settings are supposed to be." "We'll call you back" (they never did). As a result I still am using only part of the capabilities of my printer, and have no one to turn to.

Now let's talk about doing it right! My experience with the current group of dealers and suppliers of Timex/Sinclair products in the U.S. has been almost all positive. The English Micro Connection and Zebra have always been willing to talk at length about their products and be helpful in any way. Others who have also been nice to deal with are Damco, Curry, TS Horizons and Time Designs. And it doesn't stop with these. Overall, I believe the level of support and interest in us, the customers, is higher for Timex/Sinclair owners than for IBM and Apple owners. This makes me want to keep supporting these computers and not switch to IBM or Apple as my primary system (though I have both).

When computer dealers and companies will give enough attention to training and screening and supervising their personnel that I am not treated like an idiot (just an uninformed consumer) or know more than the person trying to sell me the product, then they will gain my respect. Until then I salute our Timex and Sinclair suppliers!

-- Richard Cravy

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Adding a "Real" Keyboard to Your 2068

Probably the most common complaint I hear about the 2068 is about the keyboard. Although it does work well, it lacks the feel of a full sized keyboard as found on Commodore, Atari, and others, not to mention some of the missing (single dedicated) keys such as the period, comma, semi-colon, and slash keys. In fact, a leading computing magazine recently named it "turkey of the year" because of its powerful features while lacking a decent keyboard!

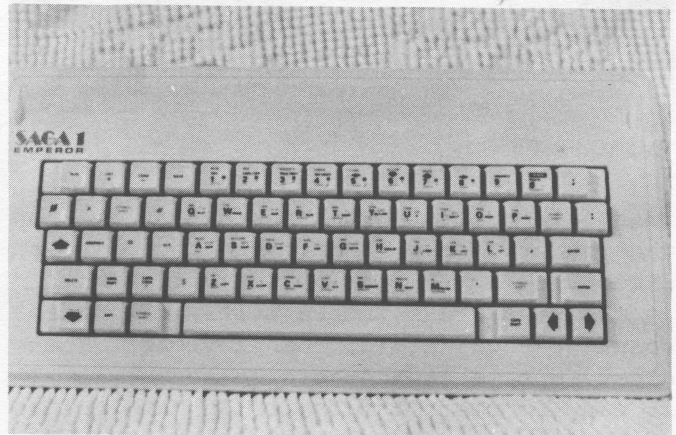
We decided to gather some of the popular Spectrum replacement keyboards and try to adapt them to the 2068 and report on how they work and feel. The keyboards we tested were the AMS Lo-Profile, Saga 1 Emperor, Lazer 62, and the English Micro Connection 2000 Keyboard (EMC 2000). This last one is available now for the Spectrum, and soon for the 2068.

Each one had its own pros and cons, and as it turned out, the less attractive it was, the more user-friendly it was! All required removing the Spectrum printed circuit board and installing it in the new keyboard housing. Installation was quick and easy for all and provided easy access to the rear connections. All the keyboards we tried came with Sinclair legends on the keys.

In judging these keyboards, I was looking for proper layout--meaning one that has keys in the same general location as on a standard typewriter. As it turned out, none did this exactly, but some did come close. You learn how to type on a "standard" keyboard; why change it? Of course if you don't know how to type, it doesn't make any difference how it's laid out. I was also looking for one that feels comfortable to use.

THE SAGA 1 EMPEROR

The Saga 1 is in an off-white plastic housing and is the same size as the 2068. There are 67 keys in all, but none of the "extra" keys are dedicated--meaning that you still have to press either the SYMBOL



SAGA 1

or CAPS SHIFT to get the character you want. The "extra" keys are: four arrows, RUN, LIST, LOAD, SAVE, 0, *, #, four symbol shifts, Graphics, =, CLS, DELETE, CAPS LOCK, \$, EDIT, ;, :, comma, period, and an extra ENTER key. The left caps shift is two keys away from the Z and the right cap shift is below and to the right of the space bar--A very user un-friendly keyboard.

The keys are a little hard to press but have a good overall "feel". All the keys are labeled in three colors, but you have to peel and stick on the labels yourself! This keyboard looks the nicest of them all, but is difficult to use. The keyboard tails are the same as used in the ZX81/TS1000, so problems could crop up from there as well. On a scale of one to ten, I give this one a 2. Priced at \$49.95

AMS LO-PROFILE

This one is in an attractive black plastic housing with red graphics. There are 41 keys with three color graphics made into the key (like on a typewriter), and a 12 key numeric keypad to the right of the main keyboard. It is much the same depth as the 2068, but much wider due to the keypad.

Extra keys include a caps lock and a period (both require either caps or symbol shift). There is no caps shift on the



AMS LO-PROFILE

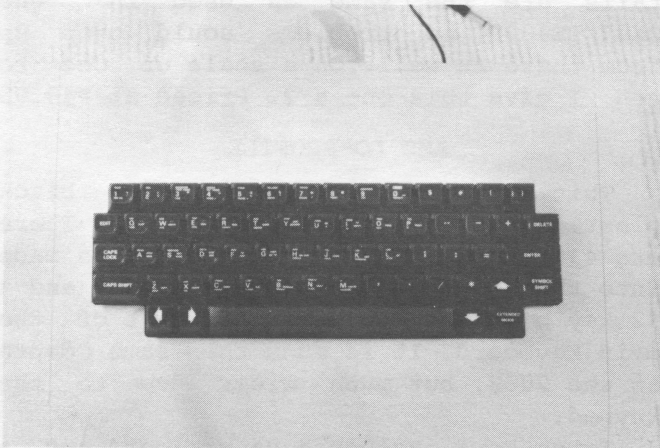
right side, but there is an extra one on the numeric pad that you could use instead.

The keys are a little stiff, but easier than the Saga. Again, the keyboard looks great, but is lacking dedicated keys. It is easy to use. It's basically a replica of the Spectrum key layout with the addition of a spacebar and numeric keypad. I give it a 6. Price is \$49.95 (\$65 from EMC).

LAZER 62

The Lazer comes in a cream colored plastic housing with a sheet metal bottom. (I understand that new models have a plastic bottom.) It is a little wider and deeper than the 2068, it actually has a lower profile than the AMS LO-Profile. A power switch on the rear keeps you from having to always un-plug your Spectrum.

It sports 62 keys and has true dedicated keys which means when you press the key labeled DELETE, you get the delete function with only one key press. This keyboard is buffered which makes sure that



LAZER 62

it doesn't load down the data and address lines more than is necessary. The printed circuit board is easy to get to, so it is possible to move some of the keys around to your liking.

The dedicated extra keys are: the four arrows, \$, #, (,), EDIT, DELETE, CAPS LOCK, ;, :, =, comma, period, /, *, and extended mode. This keyboard comes the closest to imitating a typewriter keyboard that most typists are used to. The only drawback here is that there is no right side caps shift. The labels are the peel and stick kind in one color (white) on charcoal colored keys. You have to stick on the labels yourself.

The keys feel very good but are a little noisier than the others. On the one that I tried, the space bar was a little dead. Also the space bar is not centered below the main keys but offset to the right which throws your perspective off when positioning your hands and fingers. A little more expensive with the added electronics: \$65 (\$89 from EMC) I give this one a 9.

EMC 2000 KEYBOARD

This keyboard is in a black plastic housing and about the same size as the 2068. It has 53 keys and a 15 key numeric pad. This one also has dedicated keys: the



ENGLISH MICRO 2000

four arrows, EDIT, DELETE, break, graphics, caps lock, +, *, period; three user dedicated keys (will be dedicated on subsequent models), and RUN. The RUN key is interesting in that it actually RUNS the program with one keystroke! The labels come in two colors and are part of the keys like the Lo-Profile.

This keyboard uses diode and transistor switching to obtain the extra keys and

seems to work as well as the Lazer. The keyboard has a great feel with a lot of spring to the keys. The Enter key is one row too high which takes a little getting used to and I would like to see dedicated period and comma keys where they belong. It is easy to get to the printed circuit board for changing keys more to your liking.

English Micro Connection sells these for \$69. I give this one a 9 also with the slight advantages of it having a numeric keypad, legends permanently attached, and smaller size over the Lazer 62. The rest of the keyboards are also available from EMC and from England. Check current issues of ZX Computing, Your Spectrum, etc.

After I had tried all of these on the Spectrum, I set out to try them on the 2068. As it turned out, the keyboards could easily be connected to the 2068 as long as the "tails" could be unsoldered and twisted - possible only on the Lazer 62, the Lo-Profile, and the EMC 2000. The Spectrum has two tails. One tail has eight connections and the other has five. The 2068 uses one tail of 13 connections to one connector.

In the 2068, they used the same pin-out as the Spectrum, but all in a row. The tail with eight "pins" plugged into the right side of the 2068 connector (facing from the front of the computer) and the tail with 5 "pins" must be rotated (so that pin one is now five and vice-versa) and is plugged into the 2068 connector immediately to the left of the eight pin connector. The 2068 socket has 14 positions and the final unused connection on the far left is a ground.

Connected in this way I could use all the extra dedicated keys, and at last, had a full sized keyboard for my 2068! All the keyboards we tried had plenty of room inside for the 2068 board to fit without too much modification to the base of the new keyboard. I saw no easy way to utilize the cartridge port once the 2068 was fitted. However, a hinge arrangement where the front would lift up looked like a good possibility.

One last bit of info: the TS 1500 will fit into any of these cases and work just fine with the connections being the same as the Spectrum!

-- Joe Williamson

A Keyboard Interface for Any Timex Computer

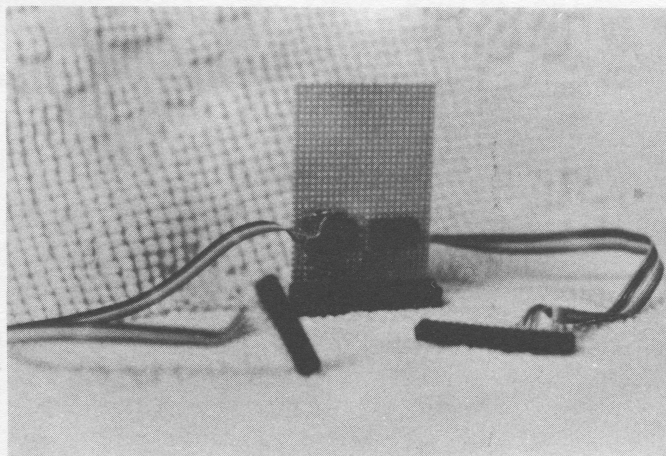
For those who do not wish to go into their computer to connect a new keyboard, here is an interface which you can plug on to the rear expansion buss. You can easily add on one of those TI surplus keyboards which are selling for as low as five dollars.

This interface uses the same type of decoding as the ULA inside each of the computers and will work on all Sinclair computers, including the 2068 and the Spectrum. The interface is basically an input port which is scanned every so often to see if a key has been pressed. The way shown here does not buffer the address and data lines very well, so you will need to use short as possible wires running from the keyboard to the interface and be careful for shorts. I used eighteen inches on mine with no problem.

Adding dedicated keys is easy. Most will require that the caps or symbol shift be initiated (shift on the TS 1000) as

well as the actual key with the function you are trying for. Following the keyboard layout diagram, We see that the caps shift on the 2068 and the shift key on the 1000 both make contact between A8 and KBD0. The symbol shift makes contact between A15 and KBD1.

...continued on page 12



Do-it-yourself keyboard interface

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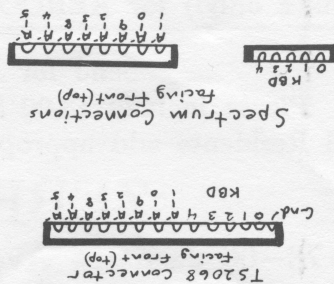
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Adding on the "extras" is easy, requiring the addition of two diodes. Some require the addition of a transistor and diode. It all depends on where the "extra" appears on the keyboard matrix. For example, the period on the 2068 resides at the intersection of A15 and KBD2 and requires the symbol shift to be pressed. Symbol shift is at the intersection of A15 and KBD1. A15 is shared by both keys and must make contact with both KBD1 and KBD2. The two diodes are added for isolation (see diagram for period) so that no shorts appear for the rest of the keyboard matrix.

Adding the comma on the TS 1000 will require contact between KBDO and A8 as well as contact between KBD1 and A15. To accomplish this, a separate switching action must take place for KBD1 and A15 - the 2N3904 transistor works fine for this task. When the key is pressed, KBDO and A8 make contact for the SHIFT operation and at the same time, the transistor is "turned on" to make contact between A15 and KBD1 to give the comma. See the diagrams to add some of the more popular functions.

The extra keys that I like to have are: DELETE, EDIT, period, comma, semi-colon, colon, asterisk, graphics, and EXTENDED mode (shifted FUNCTION on the 1000). Because they lie in the same position and require the same shift key, DELETE, EDIT, and GRAPHICS mode are obtained the same way on both types of machines.

The keyboard matrix is just that - a matrix. In the diagram, wires running vertically and horizontally do not touch until a key is pressed. Each key has one set of two contacts so that the vertical lines go to one contact and the horizontal goes to the other. As said before, keep the wires short. To make them longer, you should buffer the address lines.

While testing the four keyboards for our keyboard review, I was able to connect all the keyboards with had to the 2068 using this interface and had them all work well. So upgrade that computer of yours so your friends won't come over and say "You do WHAT with that thing?!"

-- Joe Williamson

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FOR THE DISCRIMINATING TIMEX/SINCLAIR USER

VENDOR REPORT

First to report this month is the goings on with Sinclair in the U.S. and in England. After a seemingly shaky introduction in the U.S., Sinclair is apparently ready to start letting dealers sell the QL instead of only going by mailorder. At the same time, news from England says that the deal between Sinclair and Mr. Maxwell(?) has fallen through and an extension of bank credit and a large purchase of excess inventory by the Dixon store chain has saved the day for Sir Clive and Company! The press is expecting the introduction of the new Spectrum 128 at any time--a machine based upon the Spectrum Plus but with bank switching of an extra 64K of memory as the 2068 was intended to be able to do.



The English Micro Connection has put out a new catalog of 36 8 1/2 x 11 pages, mostly of Spectrum software and hardware (but most of which works with Spectrum ROM 2068s), but also with 2 pages of QL products. EMC, 15 Kilburn Court, Newport, RI 02840; 401/849-3805.

Zebra Systems has also just released a new 48 page catalog featuring their newest products especially for the 2068; these include a disk drive system, 64 column rom cartridge, a graphics tablet, and voice synthesizer. Zebra also carries a lot of the TS-1000 software (though most of it is not new to the market) for those owners. Zebra, 78-06 Jamaica Ave., Woodhaven, NY 11421; 718/296-2385.

Amstrad, a fairly successful English computer and electronics company is intro-

ducing their computer system over here. This may be good news for TS users who have the 3" EMC or Zebra disk drives as the Amstrad also uses the 3" drive. This should mean that not only will diskettes be available, but if CP/M is ever released on the TS machines, software that runs on the Amstrad under CP/M (which Amstrad is already producing) may well run on TS machines as well.

Damco has introduced a new interface allowing the 2068 to run the Rotronics Wafadrive. The Rainbow Plus interface is both a "twister board" and a Spectrum emulator. With the version we received for review, the 3" disk drives would not work. But it was a pleasure to be able to use the Wafadrive with its excellent catalog feature and the Spectral Writer word processor on my beloved 2068. We are not aware whether or not Damco intends to modify the interface for disk drive use. Call them for information. Damco, 67 Bradley Ct., Fall River, MA 02720; 617/678-2110.

Also from Damco is the latest version of "Trans-Express", a program designed to

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transfer software onto the Rotronics Wafadrive. Not having much Spectrum software on hand I could not try much, but I was impressed with how easy the program is to use. I cannot say how well it works, however. Damco is also making available a set of Engineering Bulletins for the Wafadrive for about \$4.50 which will prove invaluable for Rotronics users. Included is information on upgrading Spectral Writer; loading Tasword II, Masterfile, Vu-Calc, and Vu-File on Wafa; printer drivers; and other goodies to make the Wafadrive system more useful.

CLASSIFIED

FOR SALE: SYNC Magazine issues from Jan./Feb. '83 to Mar./Apr. '84 in SYNC Binders. Also "The Works" from SYNTAX (4 binders full) and all 7 issues of TIMEX-SINCLAIR USER. Will not break up. **Best Offer.** Shipping extra. Bob Dyl, 15 Kilburn Court, Newport, RI 02840; 401/849-3805.

FOR SALE: Timex TS-1000 with full size keyboard, power supply, 16K memory, with BNC jacks for tape recorder. Interested parties send SASE for price and list of software for the TS-1000. Glenn Blizzard, 614 Hollywood Avenue, Suffolk, VA 23434.

WANTED: Used operational 2068. Can have defective keyboard. Send particulars to Thornton E. Benson, HCR Box 4245, Benson, AZ 85602.

FOR SALE: TS-2068 w/Romswitch, A & J Microdrive & 9 wafers, TS recorder, Aerco interface, Sakata SC-100 color composite monitor, cassette software: Tasword, Omnicalc, Profile, Personal Accountant, Figaro II, DLAN Display, Multi-Draw, and many others. Also included is Olivetti PR-2300 Inkjet dot matrix printer & 12 ampules. **All items for \$600 delivered.** 212/618-3739.

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— Software Reviews —

Starion & Space Scan

SOFTWARE REVIEW: "STARION"

This is a 3-D graphics program drawn with extreme precision very quickly and smoothly. The complex shapes can be spun, rotated; the effect is, to say the least, amazing.

You blast your way through space. Each time you blast the enemy ship, the cargo becomes a letter. This you collect until you make up an Anagram. Then you have to land on a planet & pick the different time zones in which you think the Anagram would best fit. This arcade style game is not just a plain ZAP-em game. In this one you also have to think and know your history for the different time zones. This is a very good and addictive program.

| | |
|---------------|-------|
| Graphics | 95% |
| Addictiveness | 90% |
| Money value | 92% |
| Playability | 93% |
| overall | 92.5% |

Available from GOODBYTE, 94 Leather Lane, London EC1, England, and The English Micro Connection, 15 Kilburn Ct, Newport, RI 02840.

SOFTWARE REVIEW: "SPACE SCAN" (2068/Romswitch)

This is an educational type program. It will not produce the star maps but instead produces rather simple maps to explain the shape & position of any one of 15 constellations which can be viewed under the Option 1, which produces a slide show effect.

The maps are made to name the important stars & to demonstrate how they form patterns. After the constellation has been plotted you are asked if you require any further information.

Should the text refer to particular stars, they will flash to make their position known. Then follows a few interesting facts.

Option 3 gives access to a menu of 75 stars. Each one has a page showing which

constellation it is in, the type of star it is and it's distance from our Sun.

There is also a glossary section which explains some of the technical terms used in the descriptions. This is option 5.

Option 4 is a Quiz to test your knowledge on constellations and stars. On the whole, this is a fine educational program and is well put together.

| | |
|---------------|--------|
| Graphics | 75% |
| Addictiveness | 65% |
| Money value | 85% |
| Playability | 80% |
| Overall | 76.25% |

Available from Macmillan Software, 4 Little Essex St., London Wc2r 3lf, England and, The English Micro Connection, 15 Kilburn Ct, Newport, RI 02840.

-- R Lussier

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"How to Make Money with Your Microcomputer" — A Book Review —

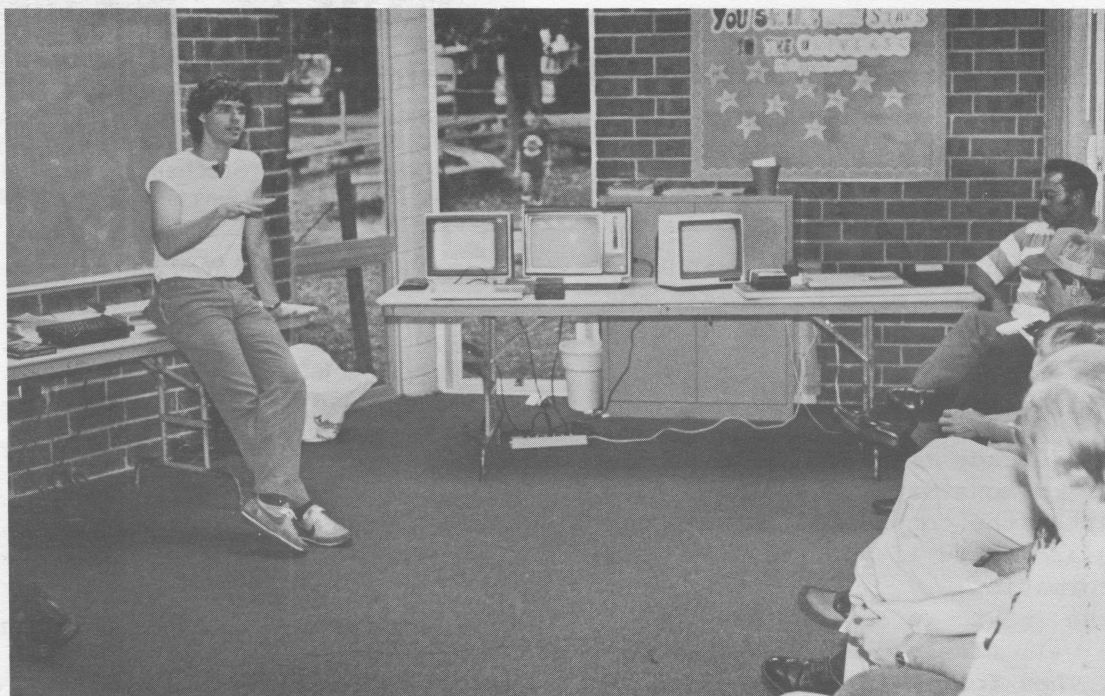
"HOW TO MAKE MONEY WITH YOUR MICROCOMPUTER" By Carl Townsend and Merl Miller

The title of this book caught my eye as I was browsing one day in a local bookstore. I am the devoted owner of a personal computer (a Timex/Sinclair 1000), and constantly use it in the execution of my profession. It is also my belief that the personal computerist can turn his/her machine into the core of a lucrative sideline. Often what prevents people from putting their ideas into money-making practice is a lack of how-to information. Hoping that this book would provide me with some of this information, I bought it.

Although I cannot report that "How to Make Money with Your Microcomputer" has turned me into a millionaire overnight, it has not disappointed me. Practically every page of the book is replete with ideas guaranteed to spark the imagination of the

potential computer entrepreneur. Townsend and Miller, both of whom are no strangers to the business end of the microcomputer field, "walk" the reader through virtually every phase of practically every imaginable money-making opportunity in which microcomputers are involved. There is a great deal of variety in their book; chapters range from telling the would-be writer how to publish articles, book reviews, and even books, to operating a service bureau, a computer repair business, and a computer store, to selling software and hardware, to how to sell systems as a consultant.

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February, 1985 — February Vendor Report; TS-2068 Printer Interface, Part II; Beginner's Programming, Part II; Tasword II Improvements. 12 pages.

March, 1985 — Spectrum Plus Now in U.S.; TS-2068 Printer Interface, Part III; A & J Microdrive Review; SPECTAX85 Review; Beginner's Programming, Part III. 16 pages.


April, 1985 — Timex Portugal Coming; ZX Microdrive Interface for 2068 Announced by EMC; Tasword II on the A & J Microdrive; User-Defined Graphics for the TS-1000, Part I; Beginner's Programming, Part IV; Rocket Man Review; Using Aerco Interface with Spectrum Rom. 16 pages.

May, 1985 Special Issue — Publisher's Statement; Portuguese 2068 Computer and Disk Drive System Hands-On Evaluation; Rotronics Wafadrive Review; Convert Your TV into a Monitor; Pro/File 2068 Review; Zaxxon Review; User-Defined Graphics for the TS-1000, Concluded. 28 pages.

June, 1985 — The Consumer Electronics Show; 2068 Graphics Primer; Spectrum Plus Review; Keyboard Template for Tasword II Users. 20 pages.

July, 1985 — Computer Shopper Magazine; Hi-Res Graphics Utility for the TS-1000; Creating TS-2068 Character Sets; Reviewing Zebra Talker; Monitor Output for TS-1000/1500.

August, 1985 — Zebra Graphics Tablet Review; Fish Locator Software; MTERM Smart II Telecommunications Tips; Gremlins, the Adventure; Unisort program listing.




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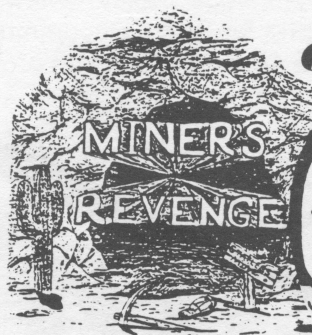
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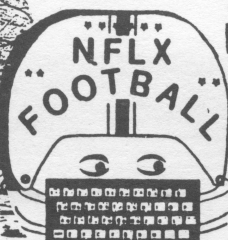
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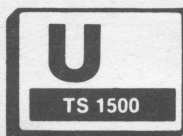
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